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pose to examine in a future letter. For the present, permit me to add, that the fact which I have discovered establishes a new connexion between electricity, heat, and light: for it has been demonstrated by M. de Senarmont—

*a.* That any artificial increase of density in a non-crystallized solid body diminishes, in the direction in which it is exerted, the conducting power of that body for heat.

*b.* That in homogeneous media which are in a state of artificial molecular equilibrium, the conformation of the thermic ellipsoid, either oblate or prolate, is always corresponding to that of the optic one.

I shall feel much gratified if you deem this communication worthy to be laid before the Royal Society. \* \*

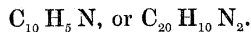
I remain, &c.,

ELIE WARTMANN.

II. "Notice of Researches on a New Class of Organic Bases, conducted by CHARLES S. WOOD, Esq." By A. W. HOFMANN, LL.D., F.R.S. Received December 21, 1858.

In his remarkable memoir\* on the action of reducing agents on nitro-compounds, in which Zinin first pointed out the formation of organic bases by the substitution of hydrogen for oxygen, some experiments are recorded on the deportment of dinitro-naphtalin (nitro-naphtalese) with sulphuretted hydrogen. Zinin states that this process gives rise to the formation of a basic compound crystallizing in delicate copper-red needles, and yielding with acids white scaly salts.

In a subsequent paper† Zinin returns to the action of sulphuretted hydrogen or dinitronaphtalin, and gives a fuller account of the products obtained in this process. The basic substance arising from dinitronaphtalin crystallizes in colourless needles of great brilliancy, which contain



It is a well-defined basic body, which Zinin describes under the name of seminaphthalidam. From this later communication it would

\* Bulletin Scientifique de St. Pétersburg, x. 18.

† Journ. für Prakt. Chem. Bd. xxxiii. 29.

appear that the copper-red coloration originally observed was due to the presence of a foreign colouring matter, which can be separated by crystallizing the base alternately from alcohol and water.

Subsequently the copper-red body appears to have been observed by Laurent\*, who states that the action of sulphuretted hydrogen upon dinitronaphtalin gives rise to the formation of a carmine-red alkali. He did not, however, analyse this substance, and the discovery of nitraniline† having established the existence of basic nitro-substitutes, the compound in question was hitherto believed to be nitro-naphtylamine.

The red crystals have of late been minutely investigated in my laboratory by Mr. Charles Wood, whose experiments have led to an unexpected result, which I beg to lay before the Society.

A current of sulphuretted hydrogen transmitted through a boiling solution of dinitronaphtalin in weak alcoholic ammonia slowly reduces the nitro-compound. The process is continued for two or three hours, during which time the greater part of the spirit distils off; the residue is acidified with dilute sulphuric acid, and the liquid heated to ebullition. The filtered liquid deposits on cooling a yellowish brown sulphate, which may be purified by several crystallizations from boiling water. The addition of ammonia to the solid sulphate immediately changes the colour to a fine dark carmine-red; the base thus liberated is washed with cold water, and finally purified by crystallization from water or very dilute alcohol.

Thus prepared, the substance, for which Mr. Wood proposes the name *ninaphtylamine*, is a light flocculent mass, composed of little acicular crystals, which are partially decomposed by exposure to a temperature of 100° C. It is difficultly soluble in boiling water, but extremely soluble in alcohol and ether.

In the analysis of the base dried *in vacuo* over sulphuric acid, Mr. Wood has obtained results which lead to the formula



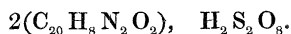
This expression was confirmed by the examination of several of the salts of the new base.

*Sulphate of ninaphtylamine* is obtained either by recrystallizing the crude salt formed in the preparation of the body, or by dis-

\* Compt. Rend. xxxi. 538.

† Muspratt and Hofmann, Memoirs of the Chemical Society, vol. iii. 111.

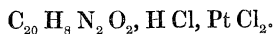
solving the pure base in dilute sulphuric acid. It forms white scales, which are apt to be decomposed by recrystallization from pure water. The salt dried *in vacuo* over sulphuric acid contains



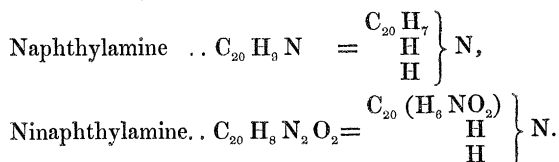
*Hydrochlorate of ninaphthylamine* forms acicular crystals; they are obtained like the sulphate, which they resemble in their general deportment. Composition :



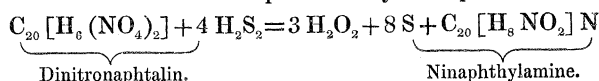
The *platinum-salt of ninaphthylamine* forms rather soluble yellowish-brown crystals, which are obtained by adding a concentrated solution of dichloride of platinum to an alcoholic or ethereal solution of the base. It has the usual constitution, containing



If it be permitted, in the absence of further experimental evidence, to speculate upon the molecular constitution of the body which forms the subject of this note, the simplest interpretation of its composition and formation would be to view it as a substitution-product of naphthylamine, but differing from the ordinary nitro-substitutes, by containing the elements of binoxide, instead of tetroxide of nitrogen.



Its formation would then be represented by the equation



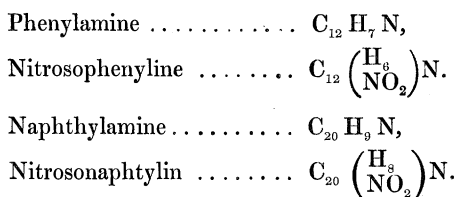
Bodies in which binoxide of nitrogen figures as a material of substitution are as yet extremely rare, whilst nitro-substitutes containing the elements of hyponitric acid are of the most general occurrence.

Some chemists have considered nitrous ether as a binoxide of nitrogen derivative of alcohol.



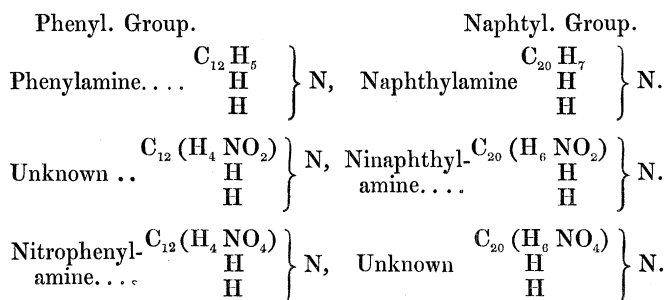
The most interesting illustrations of this kind of substitution, how-

ever, have been furnished by Messrs. Church and Perkin\* in the colouring matters produced by the action of nascent hydrogen on dinitro-substitutes, or of nitrous acid upon certain monamines.



Expressed by these formulæ, the substances in question appear to be closely allied to Mr. Wood's base; in fact, nitrosonaphtylin has the same composition as ninaphthylamine. But a superficial comparison of the properties of the two bodies excludes any idea of their being identical. The formulæ of nitrosophenylene and nitrosonaphtylin have not as yet been finally established by the analysis of their compounds, these substances, like colouring matters in general, being of an indifferent character. It is probable that they are formed by the association of several molecules, a supposition which receives considerable support from the discovery of ninaphthylamine.

The formation of ninaphthylamine promises to add considerably to the number of nitro-derivatives of the aromatic monamines. To each of these substances probably corresponds a nitrous and a nitric substitution-base, but as yet we are unacquainted with a single one in which both derivatives are known, as shown by a glance at the groups best examined.



\* Journal of Chemical Society, vol. ix. 1.